

CLAIMS

1. A fluid ejection device comprising:

5 a first substrate having a first surface, the substrate defining a fluid supply conduit extending through the substrate from the first surface;

a stack of thin film layers having a first surface and a second surface, the first surface of the stack of thin film layers being affixed to the first surface of the substrate, the stack of thin film layers including at least one fluid energizing element;

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a second substrate having a first surface affixed to the second surface of the stack of thin film layers, the second substrate primarily configured to filter fluid and not primarily to form fluid channels and firing chambers; and,

15 a third substrate positioned over the second substrate and defining, at least in part, multiple fluid channels and multiple firing chambers.

2. The fluid ejection device of claim 1 wherein the second substrate

20 comprises a polymer substrate.

3. The fluid ejection device of claim 1 wherein the second substrate comprises a patternable polymer substrate.

5 4. The fluid ejection device of claim 1 wherein the second substrate comprises a photo-imagable polymer substrate.

5. The fluid ejection device of claim 1 wherein the third substrate comprises a photo-imagable polymer barrier layer.

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6. The fluid ejection device of claim 1 wherein the third substrate comprises a photo-imagable polymer substrate configured to perform the function of both a barrier layer and an orifice layer.

15 7. The fluid ejection device of claim 1 wherein the second and third substrates comprise the same material.

8. A fluid ejection device comprising:
a substrate defining a fluid supply conduit;

a first layer assembly positioned over the substrate, the first layer assembly being primarily configured to provide electrical components including one or more resistors; and,

a second layer assembly positioned over the first layer assembly, the
5 second layer assembly being primarily configured to form a filter and define fluid-feed passageways and firing chambers, wherein the second layer assembly comprises at least one layer primarily configured to filter fluid and not primarily to form a firing chamber.

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9. The fluid ejection device of claim 8, wherein the at least one layer of the second layer assembly has a thickness of no more than about 20 percent of a thickness of a layer which forms the firing chamber.

15 10. The fluid ejection device of claim 8, wherein the first layer assembly comprises multiple thin-film layers.

11. The fluid ejection device of claim 8, wherein the second layer assembly comprises a filter layer positioned adjacent the first layer assembly.

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12. The fluid ejection device of claim 8, wherein the second layer assembly comprises at least three layers.

13. A fluid ejection device comprising:

- 5 a substrate having a first surface and a second surface, the substrate defining a fluid supply conduit between the first surface and the second surface; and,
- a generally elastic filter layer formed over the first surface, wherein the filter layer does not form sidewalls defining a fluid channel of
- 10 the fluid ejection device.

14. The fluid ejection device of claim 8, wherein the fluid channel is configured to supply fluid to a firing chamber.

15 15. A fluid ejection device comprising:

- a substrate defining a fluid supply conduit;
- a generally elastic filter layer formed over the substrate in fluid receiving relation with the fluid supply conduit, the filter layer having a thickness; and,

an additional layer formed over the filter layer and having a thickness,
wherein multiple fluid channels are formed in the additional
layer and wherein the thickness of the additional layer is at least
four times the thickness of the filter layer.

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16. The fluid ejection device of claim 15, wherein the generally elastic filter
layer comprises a polymer.

17. A method comprising:

10 forming at least one thin film layer over a first surface of a substrate;
forming at least one generally planar elastic filter layer over the at least
one thin film layer; and,
forming at least one further layer over the generally elastic layer to
form sidewalls which define at least in part multiple firing
15 chambers.

18. The method of claim 17 further comprising, after said acts of forming,
forming a fluid supply conduit through the substrate between the first
surface and a generally opposing second surface.

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19. A method comprising:

forming a first layer assembly over a first surface of a substrate
wherein the first layer assembly forms one or more electrical
traces;

5 forming a second layer assembly over the first layer assembly, wherein
the first layer assembly comprises a first layer configured to
filter contaminants from a fluid and not to form electrical traces,
and at least one additional layer formed over the first layer
which forms at least a portion of sidewalls which define
10 multiple firing channels.

20. The method of claim 19, wherein said forming a first layer of the second
layer assembly comprises forming a first layer which enhances adhesion
of the first layer assembly to the at least one additional layer of the second
15 layer assembly.